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Exchange rate regimes and fiscal discipline in OECD countries

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Non-Technical Summary

Since the start of EMU national fiscal policy in the Eurozone can be conducted almost without paying any attention to the exchange rate. At least for a small EMU member country there is no longer any perceivable link between national fiscal behaviour and movements of the nominal exchange rate. This might reduce fiscal discipline if in the past the threat of exchange rate pressure as a punishment for lax fiscal policy was important.

It is the aim of this paper to shed light on the empirical relevance of these considerations for a panel of industrial countries. The basic approach is based on the following idea: The end of the depreciation threat after the introduction of the Euro can be expected to matter if in the past different kinds of exchange rate regimes have been significant determinants of fiscal behaviour. From theoretical considerations – performed in a complementary paper (Heinemann, 1998a) – the depreciation threat should be more effective under a regime of fixed exchange rates than under floating. Basically, this result originates from the assumption that nominal exchange rate movements receive more attention as a political objective if a government has committed itself to keeping the exchange rate stable.

Besides the exchange rate regime a number of further standard and non-standard variables are included to explain the dependent fiscal variable which is the primary deficit. Standard variables in the explanation of the deficit include growth and unemployment but also political-economic variables such as government durability and type of government. The latter variables have proven to be quite successful in explaining some of the variance in debt performance of industrial countries. Openness of an economy measured as exposure to trade is included as a proxy for the sensitivity to exchange rate fluctuations. Furthermore, for the EU countries in the 90s a Maastricht variable is included that is based on the rate of Euro acceptance in the population according to Eurobarometer opinion polls. This variable is to reflect the disciplining effects of the convergence criteria specifically for EU member countries. This variable together with a general dummy for the 90s serves also the purpose to test the hypothesis whether the consolidation since 1990 was Maastricht induced or a general consequence of a new world-wide fiscal philosophy. In addition, the existence of capital controls is taken into account because such restrictions can be expected to limit disciplining pressure from foreign exchange markets. Finally, an exchange rate crisis indicator is constructed and included. This is motivated by the idea that crisis might sometimes be a precondition for corrections.

On the basis of this set of variables a dynamic fixed effects panel estimation is performed for the period 1971 to 1996 for 20 OECD countries. Not surprisingly, the cyclical variables growth rate and change of the unemployment rate are highly

significant. The political-economic variables are also improving the explanatory power of the regression. The dummy for the 90s is insignificant while the Maastricht variable is significant with the expected sign. A central result concerns the impact of exchange rate regimes: The regime dummies do not have a measurable impact. Neither is this the case for currency crises. In contrast to that stands the result for the openness variable which is highly significant: The more open a country, the higher is its primary surplus.

The cautious conclusions are the following: The exchange rate regime as such seems to be irrelevant for the determination of the politically optimal fiscal balance. This result in itself leads to an optimistic view on fiscal discipline under EMU, as there is no problem with the end of the depreciation threat because this threat did not work in the past either. On the other hand, however, there is the clear result that a high degree of openness has a deficit reducing impact. Although evidence for the relevance of the exchange rate channel in this context is lacking there are mechanisms at work by which small open economies are induced to have bigger surpluses than large closed economies. This is a worrying result in the EMU context since the single currency will accelerate integration and transform a group of relatively small and very open economies into a single Euroland economy with a low degree of openness. The study underlines the efficacy of the Maastricht criteria. It is a popular hypothesis that not the criteria but economic necessity dictated the consolidation and that therefore consolidation can be expected to continue after EMU's start. This hypothesis is rejected by the above findings.

Exchange Rate Regimes and Fiscal Discipline in OECD Countries

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January 1999

Abstract

Since the start of EMU national fiscal policy in the Eurozone can be conducted almost without paying any attention to consequences for the exchange rate. This might lower fiscal discipline. In order to shed light on the empirical relevance of this consideration, the impact of the exchange rate regime and a number of other variables on primary deficits is analysed in a panel estimation for 20 OECD countries from 1970 onwards. The conclusion is that the exchange rate regime as such is not relevant for the fiscal balance – a result backing an optimistic view on fiscal discipline under EMU. On the other hand, however, there is the result that a high degree of openness has a deficit reducing impact. This is a worrying result in the EMU context since the single currency reduces openness. The study underlines the efficacy of the Maastricht criteria. The criteria and not economic necessity have dictated the consolidation in the EU during the 90s.

JEL-Classifications H60, E61, F31

Keywords: EMU, Exchange Rate Regime, Fiscal Discipline

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1 Introduction

There is plenty of anecdotal evidence that strong depreciations of currencies put economic policy under pressure to embark on reforms. Recent examples are the currency crises of the Asian countries where sliding currencies have provoked the call for structural reforms. Within Europe, Italy of the early nineties seems to be a similar example where a weak domestic currency had the function to put pressure on economic policy to adjust in order to qualify for EMU. An often cited example of the disciplining power of foreign exchange markets is France in the first years of president Mitterand, where the return to fiscal restraint is attributed to the commitment of a franc fort in the EMS. The basic story is simple: Bad behaviour - i.e. high deficits - tend to bring an exchange rate under pressure. This pressure leads to a feeling of economic crisis in the relevant country. This feeling might come up the more intensively, the more the exchange rate has been declared to be a political target and it might overcome resistance to unpleasant reforms. With other words: Crisis is a precondition of reform because it helps politicians to overcome reform blockades put up by interest groups (Rodrik, 1996). Exchange rate pressure is one important dimension of such a "helpful" crisis.

Thus the central questions that are analysed in this paper are the following: Is there a disciplining function of foreign exchange markets in regard to economic policy, particularly in regard to fiscal policy? Does this disciplining function depend on the characteristics of the exchange rate regime? What does this imply for fiscal behaviour under EMU? While the focus of this paper is empirical, a theoretically guided analysis of the same questions is given in a complementary paper (Heinemann, 1998a).

The importance of these questions can be motivated easily. This complex has an obvious relation to central issues in present economic debates such as globalisation and EMU. Globalisation is often said to restrict the leeway of national politicians for sovereign decisions. Restrictions that arise from foreign exchange markets are one potential reason for the loss of national sovereignty. The relevance of the above questions in the EMU context is even more straightforward. In Europe, with the introduction of the Euro a fundamental change of the exchange rate regime has taken place. While before 1999 the external stability of these national currencies was always also influenced by domestic economic policy, with EMU the stability of the nominal exchange rate within the Euro zone is given by definition. It is an obvious presumption that this relaxation of economic restrictions has an impact on the behaviour of those agents responsible for fiscal policy. This idea gains some support from the experience with the other major change of the global exchange rate system, the collapse of the Bretton Wood system of fixed exchange rates. This change in the early seventies marked a turning point for fiscal behaviour in the direction of a fast

growth of public debt. McKinnon (1996) interprets this as a logical connection due to the fact that the advent of floating increased the degrees of freedom for economic policy.

Thus, there seems to be the danger that EMU could have a similar effect of destroying a disciplining restriction in Europe. Taking into account the questions concerning the sustainability of deficit reductions that have taken place in the EMU qualification period, this is a complex of some importance. If the transition to monetary union as such weakens fiscal discipline then the probability is high that there will be again increasing deficits after the convergence criteria have lost their power in May 1998, when 11 countries received the EMU ticket. To put the same issue in a slightly other context: It is an open debate in the economic analysis whether the Pact for Stability and Growth is a sensible institution or whether it would be sufficient to trust in market discipline. The loss of disciplining pressure resulting from nominal exchanges tends to weaken market discipline. If this pressure had a significant function in the past then this would be an argument in favor of institutions such as the Stability Pact - albeit not necessarily in its chosen specific construction.

In the following section, the relationship between exchange rate regimes and fiscal discipline is discussed and empirically testable hypotheses are derived. In section 3, the relevant variables are presented and first descriptive data analysis is performed. Subsequently, estimation results for a panel of 20 OECD countries for the impact of exchange rate regime and other variables on deficits are presented. In the final section, conclusions for fiscal discipline under a monetary union are drawn.

2 Exchange Rate Regimes and Public Deficits: Theoretical Considerations

In the analysis of the impact of the exchange rate regime on fiscal behaviour there needs to be an initial decision concerning the focus on a particular fiscal variable. In principle very different fiscal variables might be affected such as the size of the government sector or the structure of government revenues and expenditures. Instead of looking on these variables the focus will be on public deficits. Thus this study is to contribute also to the ongoing research on the determinants of public debt. This research is motivated by both the rising levels and the rising cross sectional diversity of public debt in industrial countries since the seventies.

Very different approaches have more or less successfully been used to explain the empirical facts, for a survey see Alesina and Perotti (1995): According to the fiscal illusion theory in the tradition of Buchanan and Wagner (1977) deficits are popular because the Ricardian equivalence does not hold due to voters' difficulties to understand the government budget constraint. These difficulties are the more

pronounced the more complicated and intransparent a fiscal system is. Apart from voters' ignorance Ricardian equivalence is invalidated by restricted time horizons of voters. If there is no sufficient intergenerational altruism the present generation will decide to live at the costs of future generations. This reason for the political attraction of public deficits seems to be increasingly relevant taking into account demographic and socio-economic developments as the decreasing fertility and the weakening of direct intergenerational links in modern society (Heinemann, 1994). There are also strategic approaches to the debt puzzle. In the presence of political polarisation and short expected durability of a government, the government in power can use high deficits to create facts for the successor with its different ideological preferences (Persson and Svensson, 1989). This corresponds to empirical findings that countries with a large extent of political polarisation or short average durability of governments tend to have larger deficits. With von Hagen (1992) the interest has shifted towards the analysis of budgetary institutions. Budgetary procedures such as the decisions making process between government, finance minister and the parliament have successfully been used to explain national differences in different public indebtedness.

With this background what could be the additional explanatory power of exchange rate regimes for public deficits? The basic idea is the following as it was set up more formally in Heinemann (1998a). As the above summarized literature has worked out, deficits are politically attractive for a number of reasons. In contrast to that, deficits might as well have politically costly consequences resulting from macroeconomic interdependencies. These costs are largely ignored in the public choice literature. There can be interest rate effects leading to higher debt payments on the existing stock of public debt. Deficits can also lead to exchange rate depreciations that are politically unattractive because voters take the depreciation as a signal for a failure of economic policy. So there is a trade-off between the benefits from a deficit and the costs resulting from its macroeconomic consequences. An essential point is that the exchange rate regime has a potential to affect this trade-off over different channels. These channels are

- the political objective function,

- the macroeconomic interdependencies

- and the government budget constraint.

Political Objective Function

The exchange rate regime is of relevance for the political objective function. The nominal exchange rate can be expected to be a more important political objective under some kind of fixed exchange rate system than under a free float. If politicians commit themselves to stabilize the nominal exchange rate this increases the weight of exchange rate stability in the political objective function. On the contrary, under monetary union the nominal exchange rate ceases to be an objective by definition within the group of countries with the common currency.

Macroeconomic Interdependence

The exchange rate system is an important determinant for the macroeconomic interdependencies. In particular, the interest determination is affected. The interest rate differential between the domestic and a reference country is influenced by the expected exchange rate changes and a risk premium for the exchange rate risk. Clearly, the exchange rate system is of relevance for these components. Therefore, the domestic interest rate might react in a different way to public deficits depending on the exchange rate regime. This will the more be the case if there is a connection between the exchange rate regime and bailout expectations - although this is not a necessary condition for the relevance of the exchange rate regime in this context.

Government Budget Constraint

Finally, over the impact on the variables of the macroeconomic system, the government budget constraint is affected. Besides the mentioned interest rate effect relevant for the debt service, on the revenue side taxation and seigniorage could be affected by the choice of an exchange rate regime. A fixed exchange rate will clearly be a more serious obstacle for controlling seigniorage than it is the case under floating. Locational and tax competition could evolve more intensively with reduced exchange rate risks typical in a fixed exchange rate environment or even more under monetary union.

In Heinemann (1998a) some of these general considerations are analysed in a simple model where the fiscal authority maximises an objective function under the constraints of a specific macroeconomic system. This system is constructed in line with the monetary approach to the exchange rate. Apart from its standard assumptions such as constant output, purchasing power parity and perfect substitutability between foreign and domestic currency assets, there are some extensions to the model. Domestic monetary supply is assumed to react positively to public deficits which creates a link between fiscal policy variables and the nominal exchange rate. In addition, there is a default risk premium positively influenced by a debt increase.

In this setting, fixed exchange rates lead - relative to floating - to a lower level of primary deficit that is optimal from the point of view of the fiscal authority. This outcome simply results from the fact that the nominal exchange rate receives more attention as a political objective under a fixed exchange rate regime than under floating.

The message for fiscal discipline in a monetary union in this model world is ambiguous because there are counteracting effects. On the one hand the transition to monetary union necessarily cuts the link between domestic deficit and monetary expansion due to the supranationalization of monetary policy. Thus, the partial control of seigniorage by the fiscal authority is lost which tends to foster discipline. In the model, a given primary deficit leads to a larger increase in the debt level under monetary union than under any other regime. On the other hand a nominal depreciation threat for lax fiscal policy does not exist any longer. With these opposite effects, the model conclusion is that for low debt countries where a lot of attention is paid to the exchange rate, the introduction of monetary union will rather tend to weaken fiscal discipline. In contrast to that, for high debt countries with a "benign neglect" stance on the exchange rate monetary union implies more fiscal discipline.

In preparing the ground for the empirical analysis there is the obvious problem that the results for the monetary union regime can not be tested for industrial countries after the second world war. EMU is the first case study for modern industrial countries introducing a monetary union regime. Instead, the impact of fixed rates and floating can be measured which again will be helpful to draw indirect conclusions for the empirical foundation of the statements concerning monetary union. If exchange rate regime related variables do not matter, then the theoretically derived conclusions for monetary union will probably not be relevant either.

It is necessary to underline the essential precondition for the hypothesis of exchange rate based fiscal discipline: it is based on the assumption that fiscal imbalances tend to lead to a depreciation of the nominal exchange rate. Although this is not an undisputed assumption it is nevertheless consistent with a large class of models and with empirical findings (see Heinemann, 1998a, for a short summary of these models and recent empirical findings).

The theoretical considerations provide the following hypotheses that might offer a starting point for empirical testing:

– Fixed exchange rate regimes should be associated with lower deficits because the negative implications of deficits for exchange rate stability are politically more costly than under floating. For the different types of exchange rate fixing there should be a relation of the following type: The more restrictive the exchange rate target the more intense the resulting disciplining pressure on fiscal policy.

– Countries with a high sensitivity to exchange rate movements should behave more disciplined. In these countries the depreciation costs of a given deficit are higher. A proxy for the sensitivity towards exchange rate changes is the openness of a country. It may happen that there are certain periods with a particular sensitivity to nominal exchange rate changes. In Europe, the qualification period for participation in EMU is such an example. Here, exchange rate changes were politically very costly for a country seeking EMU membership. Thus, this Maastricht effect can also be tested.

– Exchange rate pressure resulting from high deficits should be the lower the lower is capital mobility. If there are restrictions to capital mobility, exchange rate based discipline should consequently be less effective.

– Exchange rate crises should matter for subsequent fiscal behaviour. If crisis is truly the precondition for reform, after a crisis there should be attempts to correct fiscal imbalances.

3 Discussion of Relevant Variables and Data

The impact of exchange rate regimes and exchange rate crises is analysed on the basis of a country panel including 20 OECD countries for the period 1970 until 1997.

Table 1: Countries included in the Panel

Australia	Finland	Italy	United Kingdom
Austria	France	Japan	United States
Belgium	Germany	Netherlands	Portugal
Canada	Greece	New Zealand	Spain
Denmark	Ireland	Norway	Sweden

Data on fiscal policy variables, employment and growth originate from the OECD data base Fiscal Position and Business Cycles.

3.1 Primary Deficit as the Endogenous Variable

The primary deficit, i.e. the public deficit excluding interest payments, will be the endogenous variable concentrated upon in this study. There are different justifications for this choice. The first one is that interest payments on the stock of debt can not be directly controlled by present fiscal policy. These payments are exogenously determined by interest rates and the stock of debt inherited. Secondly, the concentration on the primary deficit reduces endogeneity problems, since the interest rate payments on the stock of debt might be influenced by the fiscal stance. The second reason comes from the political-economic analysis of debt determinants: The

primary deficit is the best indicator for the political benefits of deficits in the presence of fiscal illusion or in the absence of intergenerational altruism. The primary deficit measures the extent of "spending without taxing" (Buchanan and Wagner, 1977). Paying interest to bondholders is nothing from which political advantages arise. Of course, the primary deficit is also not perfectly controlled by the fiscal authority due to the impact of the business cycle on taxes and expenditure. This leads to the question how the primary deficit is to be cyclically adjusted in order to identify autonomous fiscal decisions. The approach here is the following: Instead of transforming the endogenous variable by a method of cyclical adjustment before explaining it in the regression, it will be used unadjusted while the growth and the unemployment rate will be among the explaining variables.

3.2 Exchange Rate Regimes

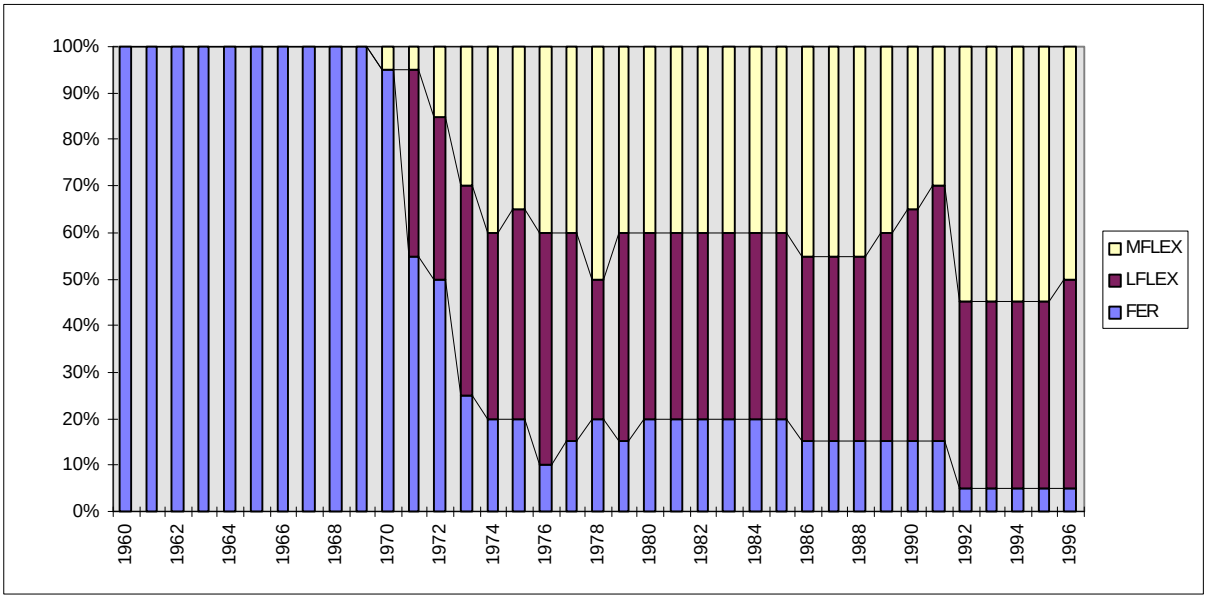
In the analysis, dummy variables for the exchange rate regime are constructed. The data used originate from the annual reports Exchange Arrangements and Exchange Restrictions by the IMF. The relevant reference day deciding the classification for each year is the 31st of December. On the basis of the reports three classes are built: The dummy FER (fixed exchange rate) stands for a peg either in relation to a single currency or to a composite of currencies. Such a peg normally implies that fluctuations are limited to 1 percent on either side of the target exchange rate. The dummy LFLEX stand for the case of limited flexibility with respect to a single currency or within a cooperative arrangement for which the most important example is the ERM of the EMS. In this medium class there is no rigid peg, but there is some kind of formal target zone restricting the currency's fluctuations in a significant way. Finally the dummy MFLEX stands for more flexible arrangements which can be more or less be defined as a floating exchange rate regime.

In classifying the regimes on the basis of the description by the IMF it was put more weight on de facto regimes than on de jure conditions as can be demonstrated by the example of Austria. In the case of the Austrian Schilling the formal arrangement in the 80s up to the EMS entry is floating which obviously does not reflect the de facto regime characterised by a peg to the DM. The exchange rate regime of Austria as classified in this study for the 80s is a peg. Another classification problem concerns the currencies of the EMS after August 1993, when the intervention thresholds of the currencies participating in the ERM, except those of the DM and the Netherlands guilder, were widened from +/-2,25% to +/-15% around the bilateral central exchange rates. The size of this fluctuation band is an argument for classifying these cases as floating. Nevertheless, in this case the formal classification as a case of limited flexibility was followed because the Maastricht criteria included exchange rate stability and large fluctuations would have endangered EMU membership - even if

there was a controversy whether the pre- or the post-1993 fluctuation band was relevant for the qualification.

In Figure 1 the distribution of exchange rate regimes is depicted. While in the end of the 60s the fixed exchange rate class still included all 20 countries, this situation changed in the early 70s with the collapse of the Bretton Wood System. The fixed exchange rate case became almost irrelevant while floating and - for the EU countries - the limited flexibility class gained importance.

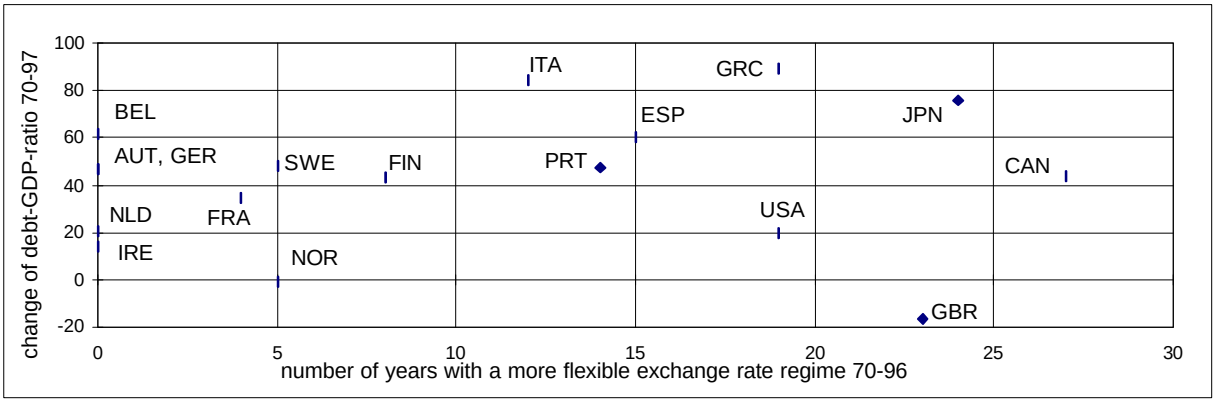
Figure 1: Distribution of Exchange Rate Regimes in the OECD



Based on the classification of IMF Exchange Arrangements and Exchange Restrictions for 20 OECD countries.

The scatter plot of figure 2 shows the position of 17 OECD countries in regard to change of the debt-GDP-ratio (this variable is not available for all 20 countries) and the number of years with floating in each country. In Europe there seems to be a relation of the kind that countries where floating was predominant tended to have the largest debt increases, although there are counterexamples such as Great Britain.

Figure 2: Change of debt level and exchange rate regime



3.3 Openness

The degree of openness of a country seems to be an adequate proxy for the sensitivity of a country towards exchange rate fluctuations. In countries with low export- and import-GDP ratios enterprises, households and as a consequence politicians are less affected by these fluctuations than in countries with high ratios. A "benign neglect" attitude seems to be a privilege of a relatively closed country such as the USA. In this study, openness is measured as the mean of the import- and export-GDP-ratio (variable name OPEN). Table 2 shows the cross-country and time series variation of this indicator. According to this indicator of globalisation there was an intensive opening of economies particularly in the seventies up to the eighties - while from 1985 onwards neither the average level nor the range of this indicator shows a further increase.

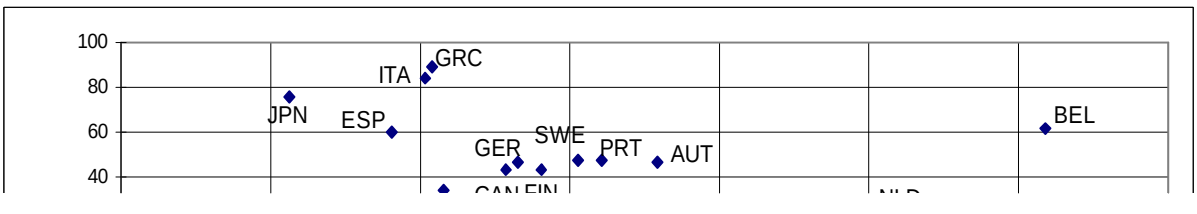
Table 2: Openness measured as (Exports/GDP + Imports/GDP)/2

	1965	**1975**	**1985**	**1995**
Unweighted Mean	*22.5*	*26.8*	*33.7*	*33.5*
Maximum	*45.8*	*48.2*	*75.0*	*74.0*
Minimum	*4.7*	*7.9*	*8.4*	*8.9*

Data: IMF International Financial Statistics

The variables degree of openness and debt increase since 1970 are characterised by a negative correlation (figure 3). Only the extrema behave atypical: Belgium with its maximum openness shows a large debt increase and the USA with its minimum openness experienced only a modest debt increase.

Figure 3: Openness and debt increase 1970-1997

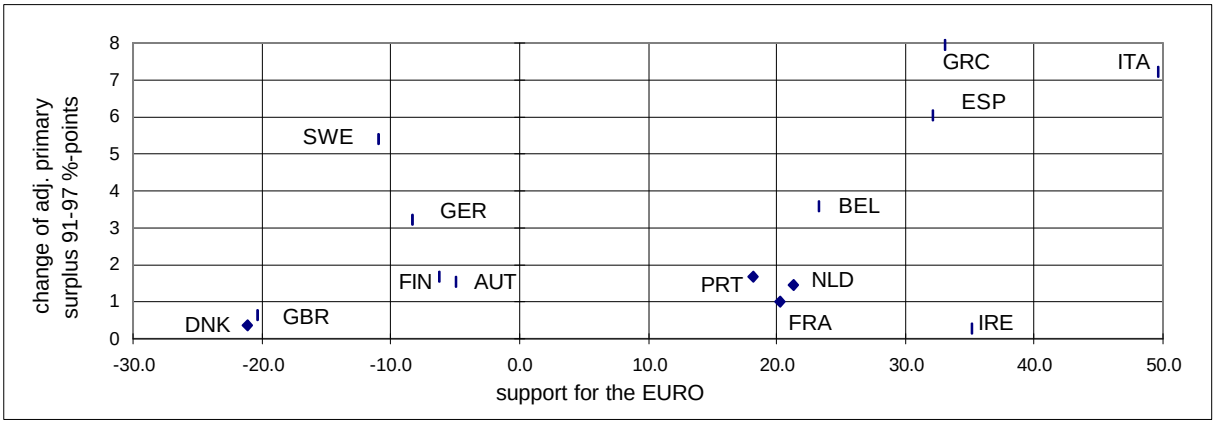


3.4 Maastricht

Since the Maatricht treaty had been signed in December 1991, the qualification criteria for EMU served as a disciplining device for national fiscal policy in the EU countries. A failure to reduce deficits below the limit of 3 percent of the GDP would have endangered EMU membership. The Maastricht effect can be interpreted in the context of a game between the fiscal authority and rent seeking interest groups that are interested in both EMU and high public spending. By the availability of the EMU exclusion threat the fiscal authority gets more powerful in negotiating deficit reductions (Heinemann, 1998b). From this perspective, it is not merely EU membership that should determine fiscal behaviour but also the popularity of EMU in each EU country. In a country with a large support for a single European currency the exclusion threat has more power than in a country with a majority of Eurosceptics. The data show clearly a positive correlation between Euro support and the change of the adjusted primary surplus for the EU countries (see figure 4).

The variable EUROACC (Euro Acceptance) used to measure the Maastricht effect in the econometric analysis is defined as follows: It is zero for non-EU countries for all periods and for EU countries before 1991. From 1991 onwards the variable measures the net support for a single European currency (difference between percentage share of population for and against the Euro) as reported in Eurobarometer, the semi-annual report on public opinion polls by the European Commission. For each year the average of both polls was constructed. Because the Euro acceptance question was posed only from 1993 onwards, the 1993 results were also taken for 1991 and 1992. A similar approach was also taken by Rotte and Zimmermann (1998). These authors, however, used the general variable public support for European Union to explain public deficits. Following these authors the simple dummy DUM91 which is equal to one from 1991 onwards for all countries is also included. This variable controls for a sometimes suggested world-wide turn to a more conservative fiscal policy in the nineties which was independent from the Maastricht criteria.

Figure 4: Euro support and change of adjusted primary surplus



Support for the Euro is the difference in percentage points between "for" and "against" answers to the question on preference for or against a common currency in EUROBAROMETER, average 1993-1997. For Sweden, Finland and Austria the average is based on 1995-1997. The adjusted primary surplus originates from OECD Fiscal Position and Business Cycle.

3.5 Capital Mobility

If there is exchange rate pressure on lax fiscal politicians it can expected to be less intense under a low degree of capital mobility. The information of the IMF's report on Exchange Arrangements and Exchange Restrictions is used in this context. These reports include information on which kind of restrictions are applied in a member country for current account restrictions and for capital account restrictions. The presence of significant current account restrictions is represented by the dummy variable RESCUR, the presence of significant capital account restrictions by the dummy variable RESCAP. A restriction is assessed to be significant if it is generally applied to all foreign transactions. For example embargo restrictions related only in relation to specific countries are not included. A typical example for a significant capital account restriction is the necessity of a prior approval for a capital export. A mere obligation to supply the authorities with information on the international transaction is not regarded as significant. A further dummy tried in this study (ART8) is the acceptance of article VIII of the IMF statutes which obliges the member country to abolish restrictions on current account transactions - albeit for a not further limited transitional period an article VIII country can keep up these restrictions.

Obviously the focus on the de jure situation is not completely satisfying. In particular, the acceleration of capital mobility caused by technological innovations and the fast development of financial market infrastructure in the recent years is not adequately measured by this concept. The variables used represent, however, an important aspect of the whole capital mobility complex and have the advantage to be official and to be easily available.

3.6 Political-economic Variables

Political-economic variables such as government durability and type of government (coalition versus multi-party) have proven to be quite successful in explaining some of the variance in debt performance of industrial countries (see the survey by Alesina and Perotti, 1995). Therefore, some of these variables are included. EOC (election or cabinet reshuffle) is a variable counting general elections and significant changes in the government which can also be a cabinet reshuffle. CI is a dummy for a significant change in the governing ideology. Thus while CI measures a major political change, EOC measures also phenomena like intra-party or intra-coalition instability. NP measures the number of parties participating in the governing coalition. These political-economic variables originate from Lane, McKay and Kenneth (1997) and from Keesing's Record of World Events.

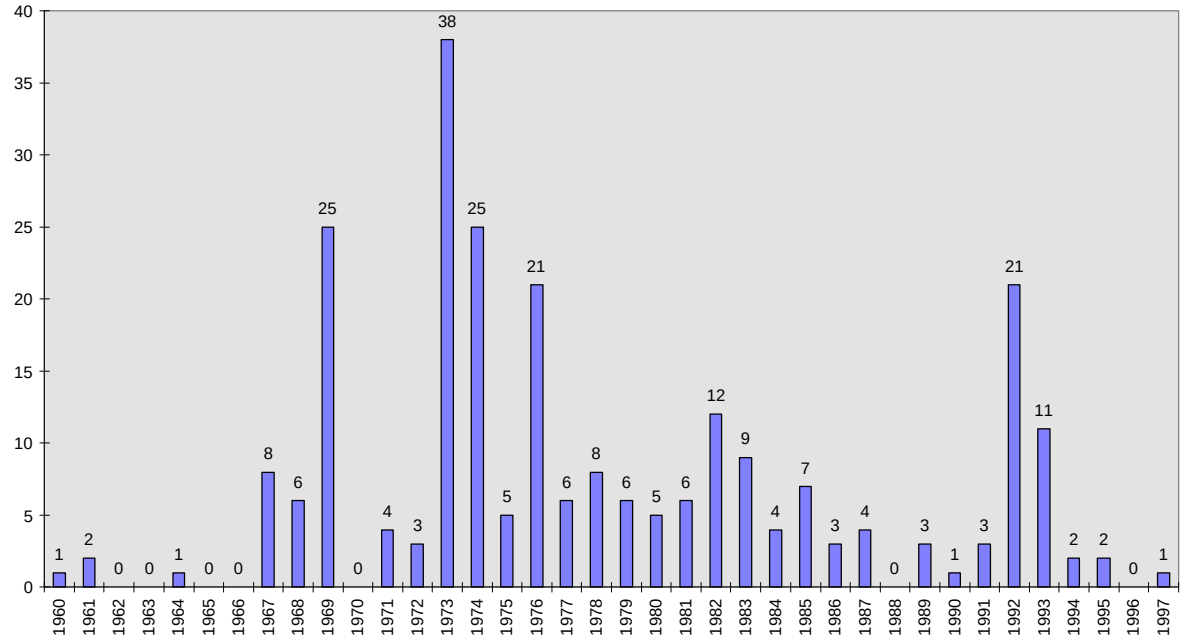
3.7 Exchange Rate Crisis Indicator

The notion of exchange rate markets disciplining fiscal behaviour is based on the assumption that exchange rate crises are politically costly because they are perceived by voters as a sign of domestic policy's failure. In addition, an atmosphere of crisis might be helpful to implement unpopular measures such as expenditure cuts or tax increases. Therefore the appearance of exchange rate crises could be tested regarding their impact on fiscal behaviour afterwards. Of course, this approach is burdened with endogeneity problems. Foreign exchange markets are forward looking. If a fiscal deterioration is correctly anticipated a crisis is followed by increasing deficits. On the other hand, the empirical literature on the determinants on exchange rate crises (see the short survey in Heinemann, 1998a) shows that it is hard to forecast why in some cases crises happen and in other cases not. Therefore it is difficult for politicians to assess whether their fiscal stance is compatible with quiet forex markets or not. The actual appearance of an exchange rate crises is a proof of the incompatibility and forces a correction.

In constructing an exchange rate crisis indicator the conceptual approach by Eichengreen, Rose and Wyplosz (1995) is followed. These authors argue correctly that it would be flawed to restrict the identification of an exchange crisis to cases of large exchange rate changes. This would wrongly exclude situations of speculative attacks on a currency that are successfully defended and that pass by without an exchange rate change. These cases can be detected by other variables such as the development of short term interest rates and official foreign currency reserves. Consequently, the indicator of currency crises should take into account these variables as well. The construction of the indicator used here is as follows: Monthly decreases of official reserves, depreciations of nominal exchange rates and increases of short term interest rate differentials are calculated. Point of reference is either Germany and the DM (for European countries) or the USA and the US-Dollar for the

rest. Point of reference for Germany are the USA and the US-Dollar and vice versa. The three components are weighted by each variable's standard deviation and added up with equal shares. A currency crisis is defined to take place whenever this monthly indicator exceeds 2 standard deviations. Figure 5 shows for each year the number of such defined currency crises which mirrors exchange rate history and events such as the slowly breaking up of the Bretton Woods system since the late 60s or the currency crises in Europe in the years 1992/1993. In the analysis based on yearly data below this crisis indicator is used in form of the variable CRIS counting for each year and each country the number of exchange rate crises.

Figure 5: Number of exchange rate crises per year in 20 OECD countries



4 Estimation Results

Table 3 presents the results for a dynamic fixed effects panel estimation (least squares with White heteroscedasticity-consistent covariances) for the primary surplus in two specifications. The first specification includes all above introduced variables while the second drops the insignificant ones from the first regression.

Not surprisingly, the cyclical variables growth rate and change in the unemployment rate are highly significant with the expected sign. The dummy for the 90s which is to control for an alleged general turn towards fiscal conservatism in industrial countries is insignificant. For EU countries it is acceptance of the Euro that has been helpful for improving the fiscal balance. The hypothesis that the success of European countries in reducing deficits in the nineties is the consequence of a global change in thinking

about deficits is thus rejected. Instead, it was clearly the Euro qualification process that had a major and EU specific impact.

The exchange rate regime has no measurable impact on the primary surplus. The dummies for flexible regimes (MFLEX) and limited flexibility (LFLEX) do not indicate significant differences to the reference case of fixed exchange rates. Neither is this the case for currency crises. However, the openness of a country proves to be highly significant. The more open a country, the higher its primary surplus - all other things equal.

Under the political variables the number of elections and cabinet reshuffles (EOC) - which is an indicator for political instability - proves to impact negatively on the primary surplus: The higher the degree of instability the higher are deficits in a given cyclical situation.

Two interactions are significant: The absence of capital account restrictions and a high degree of openness reduce the cyclical reaction of the surplus. This is consistent with a disciplining view: In a recession a country can less afford to let the deficit increase the more open it is and the less restrictions there are on the capital account.

The fixed effects can be interpreted as indicators of conditional stability. A very low fixed effect signals that a country has lower surpluses than it should be expected on the basis of the included variables. This hints on the existence of specific national characteristics which are particularly deficit inducing. Figure 6 shows deviations of individual fixed effects from Germany as the point of reference. Four countries have significantly a higher conditional inclination for deficit spending than Germany: Italy, Belgium, the Netherlands and Ireland.

Table 3: Estimation Results for Primary Surplus

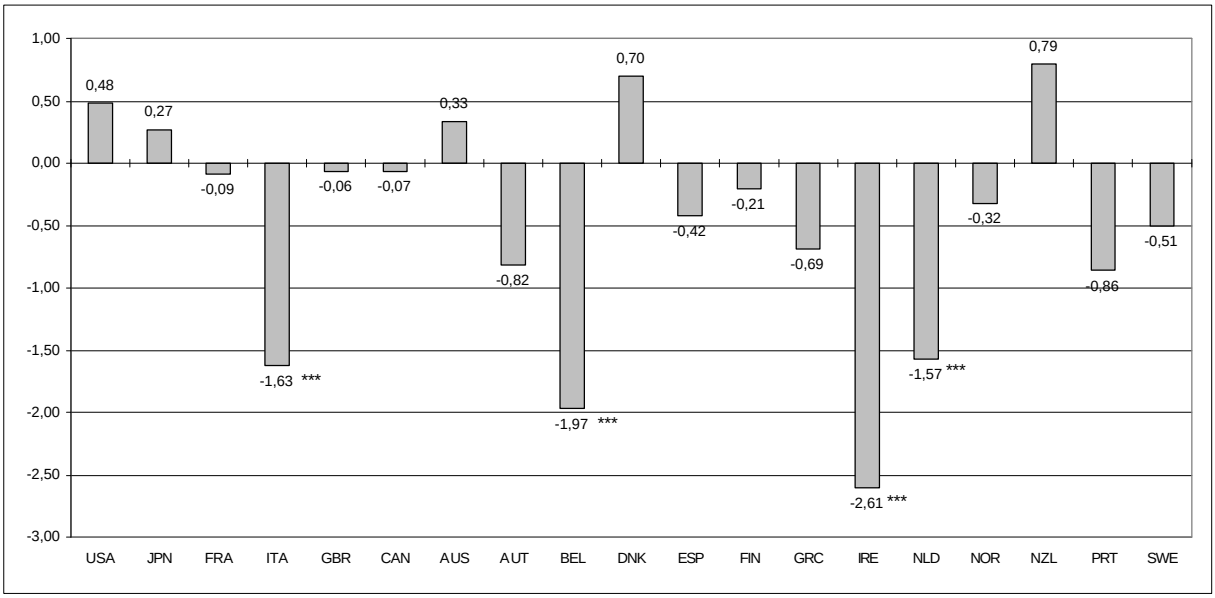
Dependent variable: annual primary surplus in per cent of GDP
Sample: 1971 1996, yearly data, 20 Countries, 460 Observations
Pooled least squares with fixed effects and White heteroskedasticity-consistent t-values

Exogeneous variable	Coefficients (White t-value)	
PRIMSURP (-1)	0.68***	0.69***
	(11.93)	(13.19)
REAL GROWTH RATE	20.83***	20.18***
(D(LOG(GDPV))	(3.71)	(3.99)
D(UNR)	-0.87***	-0.84***
	(-5.44)	(-5.41)
EUROACC	0.0344***	0.033***
	(4.47)	(4.20)
DUM91	-0.092	
	(-0.51)	
OPEN	0.047***	0.047***
	(2.57)	(2.49)
LFLEX	-0.21	
	(-0.71)	
MFLEX	0.017	
	(0.04)	
RESCAP	-0.078	
	(0.33)	
RESCUR	-0.37	
	(-0.72)	
ART8	0.39	
	(1.12)	
NP	0.16	
	(1.34)	
CI	-0.14	
	(-0.59)	
EOC	-0.26*	-0.29***
	(-1.94)	(-2.38)
CRIS	-0.082	
	(-0.70)	
REAL GROWTH*(1-RESCAP)	-14.47*	-12.71**
	(-1.95)	(2.26)
OPEN*D(UNR)	0.010**	0.0096**
	(2.29)	(2.23)
USA	-0.82*	-0.73***
JPN	-1.04	-1.131***
GER	-1.31*	-1.26**
FRAU	-1.40	-1.45***
ITA	-2.93***	-2.50***
GBR	-1.37*	-1.31**

CAN	-1.37*	-1.30***
AUS	-0.97	-0.94**
AUT	-2.13***	-2.05***
BEL	-3.28**	-2.87***
DNK	-0.61	-0.57
ESP	-1.73***	-1.48***
FIN	-1.51	-1.01
GRC	-2.00**	-1.89***
IRE	-3.91***	-3.92***
NLD	-2.88***	-2.70***
NOR	-1.63	-1.55*
NZL	-0.52	-0.48
PRT	-2.16***	-2.07***
SWE	-1.82**	-1.72***
adj. R^2	0.73	0.73
DW	2.09	2.07

***/**/*: significance of 1%/2.5%/5% (one-sided test). See text and appendix for data definitions and sources.

Figure 6: Deviations of fixed effects from Germany's



***/**/*: fixed effect different from Germany according to Wald coefficient test at significance level of 1%/2.5%/5%.

5 Conclusions

There are a number of caveats that have to be taken into account before drawing conclusions. The exchange rate regime variables might not be differentiated enough. For example the class of limited flexibility exchange rate regimes includes on the one hand frequent adjusters and on the other hand cases that are stable for a long time. Furthermore, there are problems with a potential endogeneity of this variable:

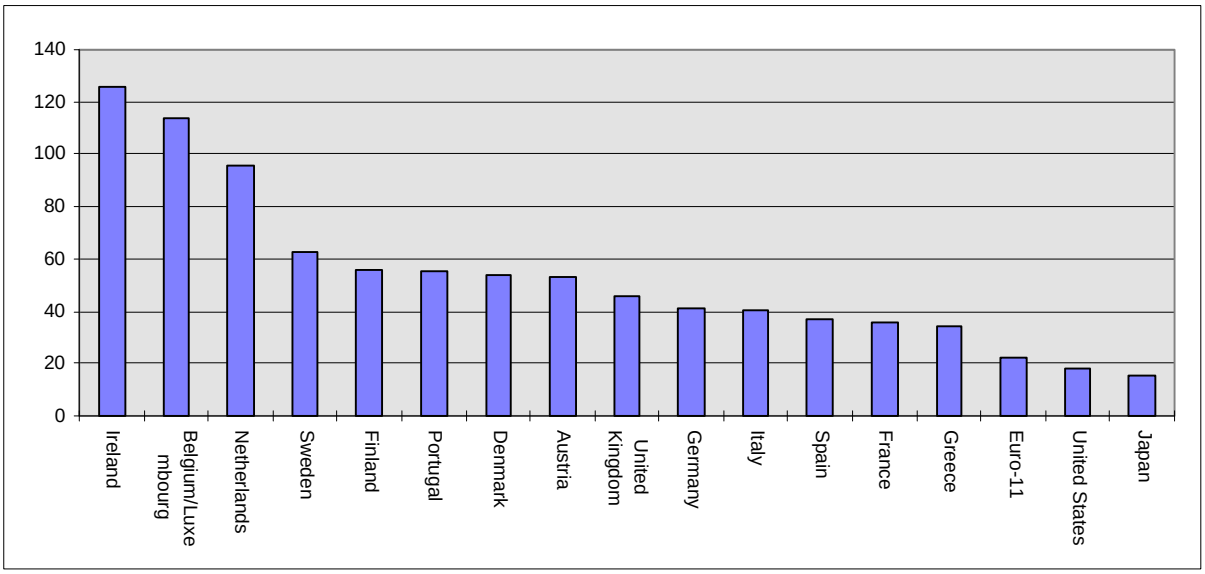
Politicians might opt for a certain exchange rate regime according to their fiscal preferences. The dummies measuring capital mobility refer solely to the de jure situation and not to the de facto degree of capital mobility. Keeping these limitations in mind, the empirical results can be related to the initial question how EMU and the end of the depreciation threat might affect fiscal behaviour.

The following picture emerges: On the one hand there is no support for the hypothesis that fixed exchange rates had a disciplining function, the exchange rate regime as such seems to be irrelevant for the determination of the politically optimal fiscal balance. This result in itself leads to an optimistic view on fiscal discipline under EMU, as there is no problem with the end of the depreciation threat because this threat did not work in the past either.

On the other hand, however, there is the clear result that a high degree of openness has a deficit reducing impact. Although evidence for the relevance of the exchange rate channel in this context is lacking there are mechanisms at work by which small open economies are induced to have bigger surpluses than large closed economies. This is a worrying result in the EMU context since the single currency will accelerate integration and transform a group of relatively small and very open economies into a single Euroland economy with a low degree of openness (see Figure 7). The increase in internal capital mobility that can be expected for Euroland after the introduction of the Euro does not counteract this effect at least on the basis of the capital mobility variables that are included here - apart from the one interacting variable there is no evidence for capital mobility disciplining fiscal policy.

The study underlines the efficacy of the Maastricht criteria. In is a popular hypothesis that not the criteria but economic necessity dictated the consolidation and that therefore consolidation can be expected to continue after EMU's start. This hypothesis is rejected by the above findings. There is a highly significant Maastricht effect influencing fiscal behaviour of EU countries in the EMU qualification period. The exclusion threat was particularly effective in those countries whose populations welcome the Euro. Obviously, in these EU member states citizens and interest groups were ready to accept sacrifices in order to support qualification. This finding raises questions for the future fiscal stance after the exclusion threat has disappeared. At the same time it is an argument supporting a continuing institutional limitation of government debt by EU legislation such as it has been established in form of the pact for stability and growth.

Figure 7: Openness (Ratio of Sum of Exports and Imports to GDP, 1995)



Source: OECD, data for Euro-11 exclude intra-EU trade

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7 Appendix: Variable Definitions and Sources

Variable Name	Definition	Source
PRIMSURP	ratio of government primary surplus to GDP	OECD FPBS
GDPV	real GDP	OECD FPBS
UNR	OECD unemployment rate	OECD FPBS
FER	dummy equal to one for fixed exchange rate regime - zero otherwise	IMF EAER
LFLEX	dummy equal to one for limited flexibility exchange rate regime - zero otherwise	IMF EAER
MFLEX	dummy equal to one for floating exchange rate regime - zero otherwise	IMF EAER
RESCAP	dummy equal to one if there exist significant capital account restrictions - zero otherwise	IMF EAER
RESCUR	dummy equal to one if there exist significant current account restrictions - zero otherwise	IMF EAER
ART8	dummy equal to one if Art. VIII IMF Statutes is accepted - zero otherwise	IMF EAER
OPEN	(exports and imports)/2*GDP	calculated from IMF IFS data
EUROACC	net Euro acceptance in EU member countries from 1991 onwards - 0 otherwise	calculated from EUROBAROMETER
NP	number of parties in government coalition	Lane et al. (1997), Keesing's
CI	dummy equal to one if there was a change of governing ideology - zero otherwise	Lane et al. (1997), Keesing's
EOC	number of elections or cabinet reshuffles	Lane et al. (1997), Keesing's
CRIS	number of exchange rate crises	calculated from IMF IFS data
DUM91	dummy equal to one from 1991 onwards - zero otherwise	

OECD FPBS: OECD Fiscal Positions and Business Cycles database
IMF EAER: IMF Exchange Arrangements and Exchange Restrictions
IMF IFS: IMF International Financial Statistics